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Monographia Indicorum Fimbristylium Praecursores — Novelties in *Fimbristylis* Vahl - III

E. Govindarajalu*
Centre of Advanced Studies in Botany, University of Madras
Guindy Campus, Chennai - 600 025, India

Abstract

Four new species of *Fimbristylis* (Cyperaceae) viz., *F. manilaliana, F. doliiformis, F. tumida* and *F. virella* are reported with descriptions and illustrations.

INTRODUCTION

The present article is in continuation to the earlier two published (Govindarajalu, 1996, 1997) based on the monographic work on the genus *Fimbristylis* Vahl of India.

Fimbristylis manilaliana Govind., *sp. nov.* (Fig. 1).

Fimbristylus microcaryae F.v.M. affinis a qua differt culmis brevioribus, foliis brevioribus angustioribus, vagina ad orem ciliata, inflorescentia breviore congesta compacta composita, bracteis quam inflorescentia logioribus, radiis primariis brevioribus laevibus spiculis rhomboideis subacutis brevioribus subteretibus cum floribus in numero minoribus, pedicellis longioribus, glumis late ovatis muticis imbricatis adpressis laevibus, staminibus 3, stylo longiore basi non dilatato, stigmate stylo breviore, nucibus velatis nitidis manifeste tuberculatis luteo-brunneis.

Types: India, Kerala, Calicut, *Govindarajalu 12699* (Holotype - CAL; Isotypes: MH, CALI); Paratypes: *ibid., Govindarajalu 12697 A*. (ASSAM,LWG); *ibid., Govindarajalu 14972, Govindarajalu 14973* (MH., DD).

Annuals. Culms tufted, flatly 3-quetrous, strongly ribbed, sulcate, flat and dipterous or flatly 3-gonous behind inflorescence, usually gracile or stiff, erect, scabridulous or smooth at apex, leafy at base, glabrous, 8-35 (-40) cm x 0.4-0.6 (-1) mm. Leaves flat, red gland-dotted, densely scabrid (serrately) in upper half margin or smooth throughout, gradually acuminate or abruptly subacute with thickened margin, keeled, glabrous, greenish, many-nerved, gracile, erect, ligulate, shorter than or as long as culms, 4-10 (-20) cm x 1.6-2 mm; sheaths all

* Passed away on 23.10.1997.

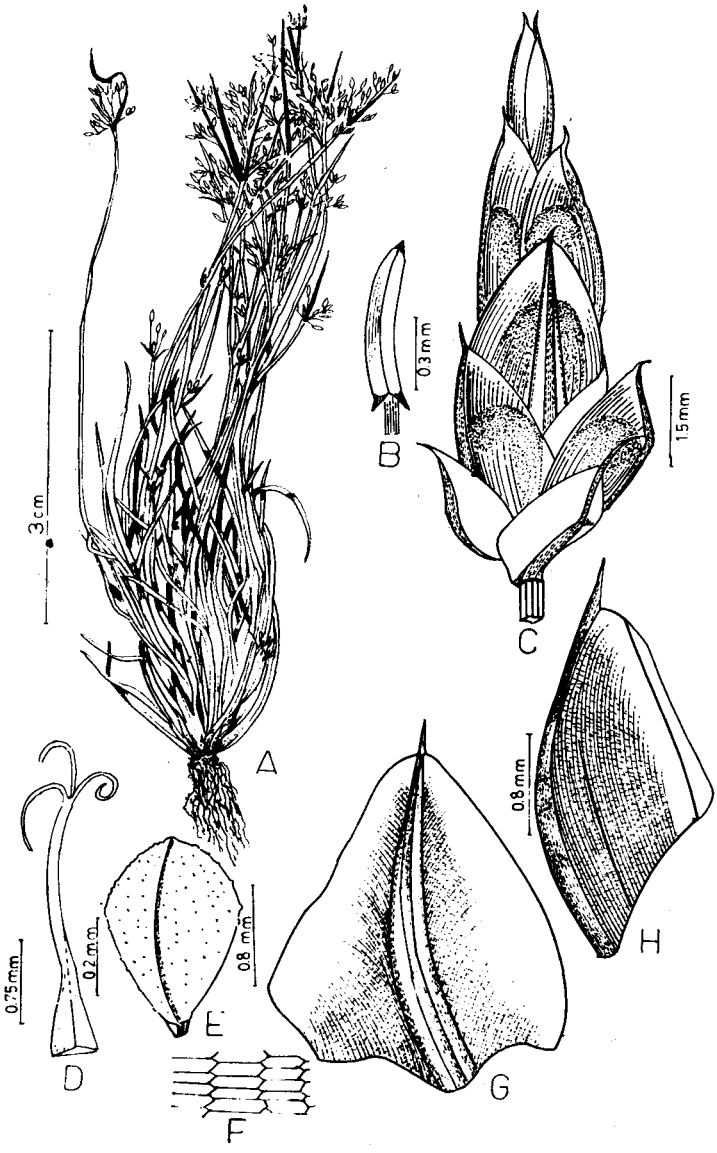

Fig. 1. *Fimbristylis manilaliana* Govind.: A. Entire plant; B. Anther; C. Spikelet; D. Style and stigmas; E. Nut; F. Epicarpic cells - diagrammatic; G. Glume - spread out; H. Glume - folded (based on holotype: *Govindarajalu 12699*).

laminiferous with membranous sides, non horny, with oblique and ciliate mouth, sharply keeled at base. Inflorescence compound-decompound, corymbiform, erect, rather contracted with 6-12 somewhat lax spikelets per ray, (0.5-) 1.5-2.5 x 2 cm; the lower most bract foliaceous, as long as or longer than inflorescence, stiff and erect or more or less flexuous, scabrid or smooth margined, and surface glabrous, 1-4 cm long; primary rays 3-8, obliquely erect, filiform, smooth or scabrid, 2.5-4.5 mm long. Spikelets lance-ovoid, rhombic ovoid or conoid, sessile or subsessile, acute or subacute with stalk less than 5 mm long, ferrugineous or cinnamomeous brown, angular, (6-) 8-10-flowered, solitary, erect, (1.8-) 2.5-3.5 (-4) x (1-) 1.2-1.5 mm. Glumes broadly deltoid ovate or trullate; basal pair of glumes opposite and lax and the remainder imbricate and adpressed; subacute or emarginate, mucronate with broadly scarious lateral sides, glabrous, cymbiform, nerveless in each half, inflated or not by nuts, (1.2-) 1.7-1.8 (-2) (incl. mucro) x (1.2-) 1.5-2 mm; mucro erect or recurved, 0.1 (-0.2) mm long; cells minute, vertically oblong, curving towards margin; keel 3-nerved, sharp or rounded; nerves excurrent into mucro. Rhachilla excavated, winged. Stamens 3; anther linear oblong, obtuse at apex, spurred at base, yellow, (0.5-) 1-1.3 mm long. Style triquetrous, glabrous, almost without dilated pyramidal base, (0.5-) 0.7-0.8 (-1.5) mm long; stigmas 3, glabrous or minutely hairy, 0.2-0.3 (-0.8) mm long, shorter than or as long as style. Nut broadly obovoid, white (brownish), depressed at apex or faintly umbonulate, minutely stipitate, translucent or opaque, shining, globosely 3-gonous, 3-costulate with convex sides, minutely and densely verruculose or prominently tuberculate or smooth, 0.5-0.7 x 0.5-0.6 mm; epicarpic cells in upper half distinct, transversely elongated-hexagonal occurring in 4-6 (-7) regular rows on each face appearing transversely lineolate.

Dedication: I take pleasure to commemorate Prof. K.S. Manilal by naming this species in his name for his several valuable taxonomic contributions, particularly his pioneer *opus* on the pioneer work of Rheede's *Hortus Indicus Malabaricus*.

Notes: Rather common in wet or marshy ditches. Occurs behind Botany department, Calicut University Campus. Easily recognized by tufted habit and rather contracted inflorescence and usually inflated glumes and by stiff obliquely erect bracts shorter than inflorescence.

Fimbristylis doliiformis Govind., *sp. nov.* (Fig. 2).

Fimbristylis argenteae (Rottb.) Vahl affinis, a qua differt culmis fere caespitosis, numero minoribus, foliis asperis plerumque pungentibus vel abrupte acutis indistincte carinatis, vaginis laevi-marginatibus, inflorescentiis cum spiculorum numeris minoribus, bracteis parvioribus fasciculatis fusiformibus apicibus apertis truncatis, glumis perfacile deciduis coriaceis non hyalinis cinnamoneis castaneisve non argenteo-cinereis longioribus doliiformibus, cum nervis carinae extensis, antheris brevioribus, stigmatibus glabris, cellulis epicarpicis reticulatim ordinatis.

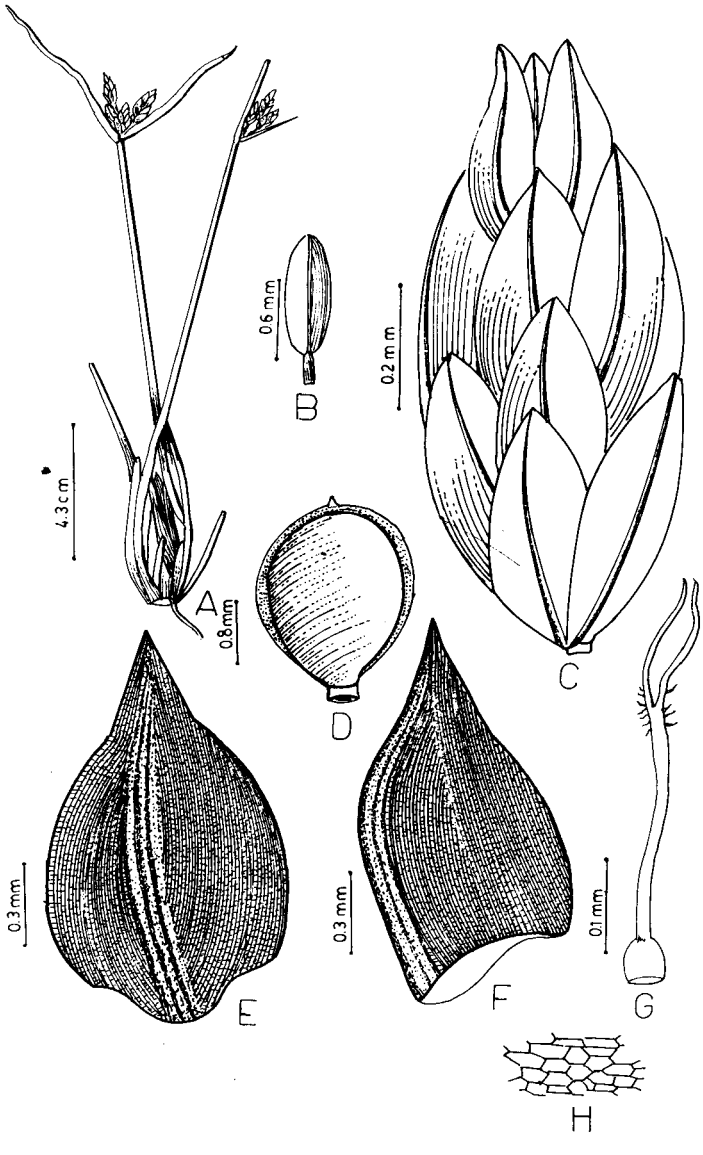

Fig. 2. *Fimbristylis doliiformis* Govind.: A. Entire plant; B. Anther; C. Spikelet; D. Nut; E. Glume - spread lout; F. Glume - folded; G. Style and stigmas; H. Epicarpic cells - diagrammatic (based on holotype: *Govindarajalu 721*).

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Types: India, Tamilnadu,Trichirapalli Dist., Bharatidhasan University Campus, *Govindarajalu 721* (Holotype: CAL; Isotypes: MH, LWG, BSI, DD, BLAT).

Annuals. Roots few, rather thick. Culms 1-2 (-5) more or less tufted, rigid, obtusely trigonous, smooth, pale brown or stramineous, 3-10 cm x 0.5-1 mm. Leaves few, erect, stramineous-green, glabrous with smooth or sparsely scabrid margin and asperous upper half surface, abruptly acute (acuminate), eligulate, slenderly many-nerved, flat or canaliculate without keel, shorter than culms, 3-7 cm x 0.7-1 mm; sheaths glabrous, pale brown with smooth margin and membranous sides and oblique mouth. Inflorescence capitate consisting of 2-4 (-5) spikelets, 10-15 x 5-10 mm. Bracts 2-3, leaf-like, abruptly acute with somewhat scabrid margin, stiff, divaricate or erect overtopping the inflorescence, 1-2 cm long. Spikelets doliiformis, open and truncate, cinnamomeous or castaneous brown, clustered, sessile, terete, 14-16 (-20)-flowered, 2.6-3.5 (-4) x 1 mm. Rhachilla deeply excavated appearing pitted, narrowly winged or almost wingless. Glumes broadly elliptic or suborbicular, abruptly ending in conical apex, conspicuously deciduous, spirally imbricate, erect, closely adpressed, coriaceous without hyaline margin, lateral nerves and purple dots, castaneous or cinnamomeous brown and not silvery grey, slightly keeled, 1.2-1.3 x 0.7-0.8 mm; keel 3-nerved; nerves weak, extending upto apex; cells minute, straight. Stamen 1; anther elliptic oblong, yellow with obtuse apex and rounded base, 0.25-3 mm long. Style filiform, slender, flat, glabrous, except sparsely hairy behind bifurcation, abruptly dilated with cupular base, 0.6-0.7 mm long; stigmas 2, filiform, glabrous, shorter than style, 0.2-0.3 mm long. Nut orbiculoid or suborbiculoid, stramineous or brownish, transluscent, minutely umbonulate, distinctly stipitate, biconvex with uniformly thickened margin, shining, smooth, 0.5 (incl. stipe) x 0.3-0.4 mm; stipe 0.1 mm long; epicarpic cells minute, obscurely reticulate by transversely elongated oblong.

Notes: Occurs in open semi-wet habitats. This species can be easily distinguished from *Fimbristylis argentea* by stramineous-green leaves, bracts longer than inflorescence, cask-shaped spikelets, readily deciduous broadly elliptic or suborbicular abruptly ending in conical apex.

Etymology: The name is derived from cask-shaped spikelets.

Fimbristylis tumida Govind. *sp. nov.* (Fig. 3).

Fimbristylis crystallinae Govind. affinis, a qua differt culmis in numero pluribus, foliis culmis brevioribus, vaginis rubro-punctatis omino laminiferis cum are transversaliter truncato oblique ciliato, bracteis asperis scabridisve, radiis planis, spiculis majoribus cum numeris florum minoribus, glumis anguste triangulari-ovatis vel spathulatis acutis vel apiculatis lanceolato-ovatis sordidis, plerumque tumidis, carinis acutis cum nervis excurrentibus sigmoideis, staminibus 2, antheris cum basibus rotundatis, stylo longiore stigmatibus brevioribus, nucibus opacus majoribus tuberculatis, sine appendicibus pluricellularibus, cum apicibus rotundatis et numeris minoribus serierum cellularum transversaliter lineolaterum in quoque superficie.

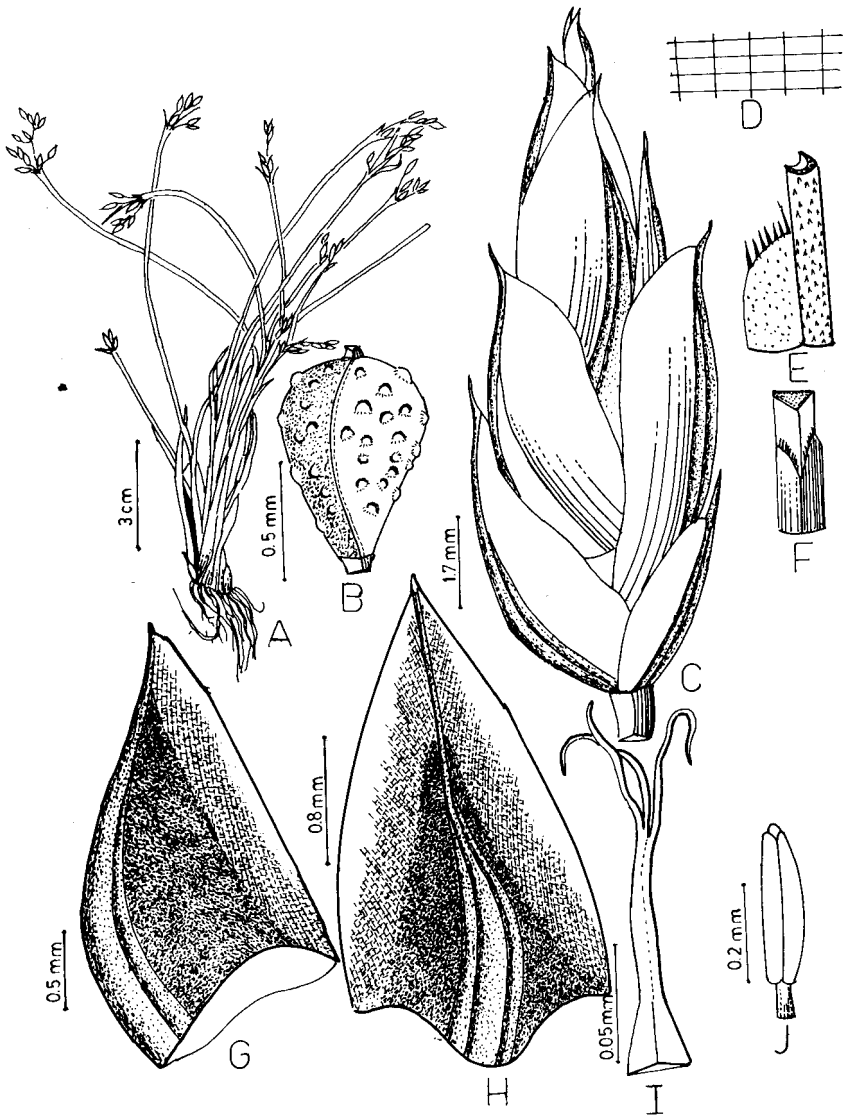

Fig. 3. *Fibristylis tumida* Govind.: A. Entire plant; B. Nut; C. Spikelet; D. Epicarpic cells - diagrammatic; E. Mouth of sheath - lateral view: diagrammatic; F. Sheath - frontal view: diagrammatic; G. Glume - folded; H. Glume - spread out; I. Style and stigmas; J. Anther (based on holotype: *Govindarajalu 11017 B*).

Types: India, Kerala, Sholayar, *Govindarajlu 11017* (Holotype: CAL; Isotypes: MH, BSI, BLAT). Paratypes: India, Tamilnadu, Tirunelveli Dt., Courtallam on the way to Main Falls via Tiger Falls, *Govindarajlu 10665* (ASSAM, LWG); *ibid.*, Palghat Dist., in and around Pothundy, *Govindarajalu 14932* (MH., CAL); ibid., Sheimally, Kaikatty, *Govindarajalu 14585* (DD, MH, CAL, BSI).

Annuals. Roots few, rather thick. Culms 4-6, rigid, stiff, erect, without thickened base, glabrous, 3-4-gonous, ribbed, sulcate, smooth, leafy at base, (5-) 10-15 cm x up to 0.5 mm. Leaves stiff, erect, broad, flat, ligulate, ligule with thickened margin, keeled, red-dotted, shorter than culms, 1 mm broad; sheaths all laminiferous, pale brown, red-dotted, closed with ciliate curved or transversely truncate mouth, glabrous. Inflorescence (simple) compound, lax, umbelliform consisting of 10-15 spikelets, 1-2 cm x 1 cm. Involucral bracts leaf-like, stiff, erect with asperous surface, shorter than inflorescence. Primary rays 2-3, flat, smooth, 1-1.5 cm long. Spikelets lance-ovoid, erect, acute, angular by keels, 8-10-flowered, ferrugineous or pale brown, solitary or paired, pedicellate, rather congested, 3.5-3.6 x 1.7-1.8 mm; b`asal glumes 1-3 empty. Glumes usually narrowly triangular lovate or lance-ovate, chartaceous, pale brown, acute or apiculate, cymbiform, adpressed, dull with nerveless tumid sides, glabrous with broad hyaline margin, 1.6-2 (incl. mucro) x 1-1.2 mm; keel very prominent, 3-nerved, sharp with sigmoidally curved nerves; nerves excurrent; cells oblong curving towards margin; apiculus or mucro 0.1-0.2 mm long. Rhachilla excavated, winged. Stamens 2; anther yellow, linear oblong with translucent apex and rounded base, *c.* 0.5 mm long. Style triquetrous, glabrous with pyramidal base, 1 mm long; stigmas 3, shorter than style, glabrous, 0.5 mm long. Nut turbinate or narrowly obovoid, triquetrous, symmetric, 3-costulate, faintly tubercled without pluricellular outgrowths, white-yellow, opaque (non crystalline), stipitate, umbonate, rounded at apex, 1.8-2 (incl. stipe) x 0.5 mm; epicarpic cells distinct, transversely elongated, lineolate occurring in 6-8 regular rows on each face; stipe less than 0.1 mm.

Notes: This species occurs at an altitude of 400-600 m. The outstanding features differing from *Fimbristylis crystallina* Govind. are sordid state of plants, leaves shorter than culms, sheaths with ciliate mouth, bracts with asperous surface, longer spikelets with lesser number of flowers and tumid glumes.

Fimbristylis virella Govind., *sp. nov.* (Fig. 4).

Fimbristylis glabrae Steud. affinis, sed differt foliis stramineis vel viridulis incurvis falcatis gradatim acuminatis perbrevioribus rosulatis, vagina ad orem glabra, inflorescentia longiore, spiculis parvioribus acutis, glumis trullatis brevioribus, carina 5-nervi, plerumque 3 staminibus, antheris apiculatis brevioribus, nucibus obovoideis brevioribus manifeste tuberculatis sine emergentibus pluricellularibus.

Types: India, Kerala, Chalakudi Division, Poringalkuthu, *Govindarajalu 6072* (Holotype: CAL; Isotype: MH). Paratype: India, Karnataka, Someshwar Bachappu, *Govindarajalu 13143* (BSI, BLAT).

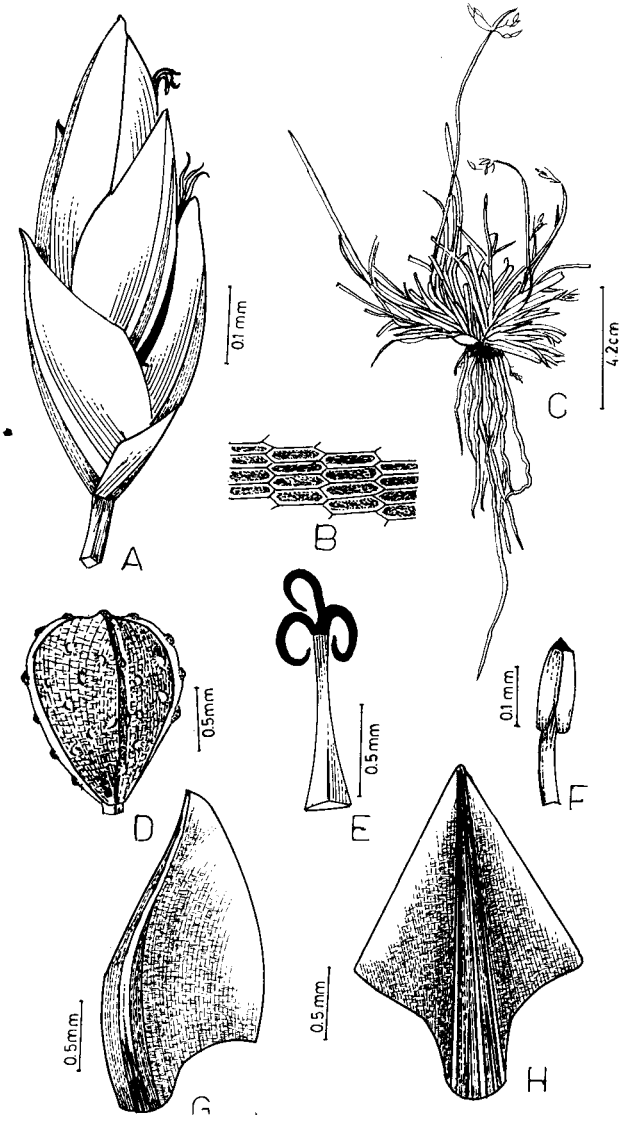

Fig. 4. *Fimbristylis virella* Govind.: A. Spikelet; B. Epicarpic cells - diagrammatic; C. Entire plant; D. Nut; E. Style and stigmas; F. Anther; G. Glume - folded; H. Glume - spread out (based on holotype: *Govindarajalu 6072*).

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Annuals. Culms in tufts of 2-3, sometimes solitary, tetragonous or tetrapterous, flatly angular behind inflorescence, sometimes woody at base, rigid or slender, smooth throughout, glabrous, leafy at base, 10-16 cm x 0.5-1 mm. Leaves many, rosulate, stramineous or greenish, flat or incurved falcate, gradually acuminate, much shorter than culms with thickened margin, glabrous, few-many nerved, ligulate, 5-8 cm x 0.5-1 mm; sheaths all laminiferous,with transverse-oblique glabrous mouth. Inflorescence simple consisting of 6-9 (-12) spikelets, patent, umbelliform, 1-2.5 cm long; bracts stiff, erect, more or less leaf-like, smooth, up to 1 cm long; rays absent; pedicels slender, smooth, 1-2 cm long. Spikelets elliptic ovoid, acute, ferrugineous or castaneous brown, 8-10-flowered, solitary, 3-3.2 x 1-1.2 mm; basal glumes empty. Glumes trullate, rounded at apex, brown, membranous with broadly transluscent margin, more or less shining, muticous, cymbiform, adpressed, inflated by nuts, 1.5-1.7 x 1-1.5 mm; keel distinct, 5-nerved, sometimes seemingly 3-nerved, nerves extending up to apex, curved. Rhachilla excavated, winged. Stamens usually 3; anther apiculate without spur at base, 0.2-0.3 mm long. Style triquetrous, glabrous, slightly dilated at base, *c.* 1 mm long; stigmas 3, glabrous, 0.5-0.7 mm long. Nut obovoid, white or yellowish brown without pluricellular emergences, distinctly tubercled, minutely stipitate, umbonulate, triquetrous with convex sides, tricostulate, rounded or more or less depressed at apex, 0.7-0.8 x 0.5-0.6 mm; epicarpic cells in upper half minute, distinct, transversely elongated-hexagonal appearing lineolate and occurring in 6-8 regular rows on each face; stipe *c.* 0.1 mm long.

Notes: This new species is usually found in grasslands above mean sea level. This novelty can be differentiated from *Fibristylis glabra* by incurved falcate rosulate leaves much shorter than culms and sheath with glabrous mouth.

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